Chapter II

Stanvac & Mari Gas Field, 1957-1984

At the time of independence in 1947, there were four oil wells in Pakistan namely Khaur, Dhullian, Joya Mair and Balkasar.[1] All of these wells were in Punjab and owned by Attock Oil Company (AOC) producing 1500 barrels per day, the remaining oil requirement of the country which totalled 7500 barrels was imported.[2] Oil exploration was given a priority by the new government, thus an act was passed in January 1949 which regulated the oil exploration in the country. The act specified that contracts with oil companies will be on production sharing. It was enacted that any foreign company carrying out exploration in the country employ at least one quarter of work force from local population. Minimum of 250 and maximum of 5000 square miles of area be allotted for a period of three years for exploration.[3] In 1949, Pakistan Oilfields Limited (POL) was formed; it was a subsidiary of Attock Oil Company with government having 33% shares. In 1950, another company, Pakistan Petroleum Limited (PPL) was formed, it had its roots in Burmah Oil Company (BOC).[4] The very first oil well after independence was drilled at Lakhra near Karachi on 2 May 1948, by BOC , it was drilled to a depth of 12,666 feet in Sembar formation; the well was later abandoned.

Pakistan Oilfields Limited on 10th October 1951,[5] made a spectacular discovery of large reserves of natural gas in the Sui Main Limestone of Early Eocene age in Bugti tribal area, on the Sui structure (located in Baluchistan Province), in Central Indus Basin. The original recoverable gas reserves were estimated to be over 10 trillion cubic feet (TCF) equivalent to about 1 billion barrels of oil, the heating value of the gas being 955 Btu. The discovery of Sui Gas Field was the first major milestone in the search for hydrocarbons in Pakistan. It brought an economic and social revolution; within a year gas pipes were laid till Karachi and domestic life style changed. Cooking became safe and easy, reliance upon oil for domestic use was reduced considerably. Sui Gas Transmission Company (SGTC) was established in 1954, the very first gas company of Pakistan, a sister company Sui Northern Gas Company

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1 Ministry of Energy (Petroleum Division) Hydrocarbon Development Institute of Pakistan. *Pakistan Energy Yearbook-2016.*

2 *Pakistan Petroleum Policy 1991* . Government of Pakistan, Ministry of Petroleum and Natural Resources, November 1991.

3 Government of Pakistan Act No.XXIV of 1948 ,dated 8th January 1949, titled *The Regulation of Mines and Oilfields and Mineral Development (Government Control) Act,1948*.

4 *Pakistan Petroleum policy 1991* .

5 *Pakistan Energy Yearbook,2016*.,p-93.

Limited (SNGPL) was raised in 1962.[6]

In the wake of the natural gas discovery at Sui in 1951, international oil companies joined the modern day gold rush. Karachi became the hub of economic and social activities. In 1954, Standard Vacuum Oil Company (Stanvac) was the first oil company which came to Pakistan in search of oil and gas; followed by Hunt International in 1955, Shell Oil in 1956, Sun Oil in 1957 and Tidewater in 1958; all were American oil companies in search of oil. Between 1954-1959 no less than 34 exploratory oil wells were drilled and natural gas was discovered at Zin, Uch, Mazarani, Khairpur and Kandkot by (PPL) and Stanvac at Mari; all in Eocene limestone reservoir. Only notable oil discovery was at Karsal in Potohar region by PPL and POL but quantity was less.[7]

Pak-Stanvac Petroleum Project (PSPP).1954

On 24 September 1954, a memorandum of understanding was signed between Pakistan and Standard Vaccum Oil Company; resultantly Pak-Stanvac Petroleum Project[8] took birth. Stanvac was one of several dozen oil companies which were formed in America after the giant oil company Standard Oil Company was spilt into 34 companies through a court decision. At the time of dissolution, Standard Oil Company owned almost 90 % of oil business in USA. Stanvac was one of the several dozen oil companies which took birth in America after the giant oil company Standard Oil Company which owned almost 90 % of oil business in USA was dissolved through a court decision. Stanvac a reputed company was operating in the region since 1913 in Bengal exploring oil. Under the agreement, Pakistan Government held 25% shares, Mobil having 37.5% and remaining shares by Esso Eastern. The concession area comprised of 10,000 square miles in West Pakistan and 15,000 square miles in East Pakistan.

Pakistan had inherited only a skeleton of geographical survey on independence as majority of equipment was at Calcutta. However, the government patronised it and departments were opened in universities at Karachi, Lahore and Peshawar. An extensive seismic survey of the country including aerial survey was carried out by the Geological Survey of Pakistan with the assistance of Canada and USA. Stanvac during its exploration in 1955 conducted Aeromagnetic Survey of more than 1,000,000 square miles and Gravity Surveys covering 10,000 square miles alongwith 4000 square miles of seismic survey; surface geological investigation was completed by December 1956.[9] PPL was the pioneer that carried out survey after independence in 1949, and also between 1956-60, followed by Hunt in 1957-59 and Tidewater in

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6 *Petroleum Policy 1991*, Government of Pakistan.

7 Iqbal Kadri *Petroleum Geology of Pakistan*, Pakistan Petroleum Limited , Karachi, 1995, pp,3-14.

8 Gazette of Pakistan, 30 December 1976.

9 A.Munir,S.Asim,S.A.Bablani,A.A.Asif Seismic Data interpretation and Fault Mapping in Badin Area, Sindh,Pakistan. *Sindh University Research Journal*, Vol.46 (2)2014. .pp,133-142. *Mari News* vol-5,issue No.4.

1959-60.[10] However it was the historic folktale which acted as the beacon and exploration was finally focussed in and around Daharki; almost an eagle's flight east of Sui gas field.

Daharki is a frontier town situated between Sindh and Punjab. In 1955-56, when the initial exploration was initiated by ~~the~~ Stanvac Company, there was no air link between ~~Karachi~~ and ~~the~~ Daharki, the only way other than the sixteen hour drive was an equally laborious rail journey.

During that time, there was no electricity, medical facilities, educational institutions and locals had no access to fresh drinking water. Radio was the main source of news for the locals and foreigners as there was no television; it came in Pakistan in 1964. Initial exploration was conducted in the summer heat of Sindh with temperatures soaring to as high as 50 degrees Centigrade. Mr George and Mr Roberts were the two pivotal figures who spearheaded the initial exploration in Sindh.

Exploration then and even today is still based upon principle of assumption, although in our era the technology has greatly advanced the chances of success yet it is not guaranteed. Mr Roberts was a tall, bald man in his mid-forties with a good sense of humour; a prerequisite for a successful explorer. After initial marking of the intended drilling site, the machinery was brought by road from Karachi. The process of drilling is laborious and requires an immense patience. It took almost a month of drilling and it was decided that efforts be continued for another two days and if no result found the well would then be abandoned; a usual practice in oil exploration. Summer is cruel in rural Sindh thus the days at camp invariably started at dawn, camp was established under the canvas, and after a long day, during and after dinner the men would sit around and share their tales of life. Language was a barrier but soon locals and foreigners both picked and devised easy signals and vocals. As Juma a local recalls,

'The presence of white skinned men was a novelty in the tribe, we were living in bhashas, and reed built huts. There were few animals in our clan as well; usually we migrate with the water and weather. Life was tough only I did not know at that time. I do remember when gas was discovered, it was evening and our clan elders were sitting together smoking tobacco and we children were sitting close by when, they narrated how white men who had been digging for the gold of Momal, found the gas, a gas which can kill anyone who tries to venture near the treasures of Momal'

Mari X-1 was the very first well drilled, at 1535 hours on 7 July 1957. It took another year of drilling before this well became operational and with this the area, company and the country was ushered into a new era. Two more wells Mari X-2

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[10] A.Munir,et al "Seismic Data Interpretation and fault Mapping in Badin Area, Sindh". *Sindh University Research Journal Science Series*,vol,46(2)133-142 (2014).

which was a dry hole and a flank well Mari X-3 were drilled. Estimated gas reserves were in range of 4 Trillion Cubic Feet (TCF). Wells were drilled to a depth of 2053 meters in sub section of the lower Kirthar 'B' limestone formation. Pak –Stanvac apart from finding gas in Daharki, also drilled in East Pakistan, 'while drilling for oil at Kuchma in Bogra District, the project struck a thick seam of coal at a depth of 8,000 feet'.[11]All in all, the Pak-Stanvac drilled eight exploratory wells in West Pakistan and three in East Pakistan, a total depth of 1,25,966 feet was drilled.[12]

South Eastern Drilling Company was engaged by Esso for drilling. Muhammad Sadiq born in Poonch (Azad Kashmir) came to Sindh in 1956 and soon found a job with the drilling company as driver. He was later employed by Esso as permanent staff. It is worth highlighting that he remained on active service till 1993. Another notable person to join Stanvac in 1962 was Muhammad Sadiq, a resident of Rawalakot (Kashmir) who came to Karachi in 1953 and served as domestic help before joining Stanvac in 1962 as a driver. '*I was initially assigned the duty to drive Mr Macpherson the managing director, we had a Mercedes Benz then, I fell in love with the car and took extra care of it, resultantly after two years I was made general manager of drivers. There were no less than ten drivers under me. High point of my career is that till 1997, when I retired, I drove Mercedes only. I was given a letter of appreciation by the Mercedes Company for proficient driving of their brand'.*

The producing formation Habi Rahi Limestone is of middle to upper Eocene age. The reservoir is spread over 181417 acres, it is 300 feet thick at a depth of 2053 feet and the gas zone is approximately 177 feet in thickness. The gas itself is dry with 70.6% Methane, 20.1% Nitrogen, 9.0% Carbon Dioxide and 0.3 % Ethane. The high percentage of Carbon Dioxide made it perfect for fertilizer industry.[13]The heating value based upon the average of first seven wells was 723 BTU. The gas in Mari Field is produced from carbonate of Eocene age; the other major gas field (Sui) is also carbonate in nature. One fifth of earth's package of sedimentary rocks are made up of carbonate i.e., limestones and dolomites. Carbonates are born in or close to the environment of deposition.

Engro and Mari

Pakistan itself underwent a transition when the military took over in a bloodless coup; General later Field Marshall Ayub Khan took over the reins and remained in power till 1967. This decade provided Pakistan with ~~an~~ economic stability, Indus Water Treaty was signed with India, thus marking the beginning of a peace which lasted till 1965, when both countries went to war. One of the major achievements of

11 Mari News Volume No.5, October-December 1996.

12 Information brochure published by ESSO in 1970.

13 Mari News Quarterly, Volume no.1 issue No.1 October-December 1993.

General Ayub Khan was the introduction of mechanical agriculture in the country. Land holding, distribution and production were all addressed and tractors and fertilizers were introduced. In 1962 the very first oil refinery was commissioned at Karachi followed by another in 1966.

Based upon the gas discovery in Mari, on 21st December 1964, ESSO Eastern's general manager Mr Strasburger gave the details of what was the biggest foreign investment in Pakistan at that time. Esso was to build a new 26 Million US$ fertilizer plant at Daharki, the largest of its kind in the world, scheduled to be operational by the end of 1967. 'The plant will produce 1, 75,000 tons urea fertilizer a year'. Esso was to invest 19 Million US$ and the remaining amount was to be invested by the Government of Pakistan.[14] Pak- Stanvac after the discovery of gas at Mari had ventured into the petroleum business as well as opening new petrol pumps in different cities of the country including Sheihkupura.[15]

The fertilizer plant was dependent upon the newly discovered gas. Mari Gas Field expansion was launched in December 1965 and completed in March 1966. Five wells were commissioned and completed by the Mothercade Company, later in 1968-69; five more wells were developed providing 39 million cubic feet of gas to the newly commissioned ESSO (Engro) plant. The plant was commissioned on 4th December 1968, its structure having a height of 325 meters is still considered to be the tallest of its kind in Pakistan. This plant was strategic in nature as it ushered Pakistan into the green revolution. The per acre yield from an acre in upper Punjab rose from twenty maunds per acre in 1955 to almost double by end 1970s. Inayat now seventy years old is a Punjabi farmer, he recalls. *' I was young when for the first time Engro fertilizer came , initially farmers were reluctant to use it as they felt that it will have adverse impact on the crop , with passage of time, the yields were so drastically high from the conventional manure that everyone start using fertilizer and now it is almost unthinkable to do farming without fertilizers*.'[16]

Construction of ~~the~~ Daharki plant provided a big boost to the locals in terms of ~~the~~ job opportunities and economic prosperity. Nassebo is one such person whose life underwent drastic positive changes due to the Mari Gas Field. Born in 1944 in an open tent, she was the sixth in hierarchy of her poor family, whose sole substance was either begging or doing petty job on day to day basis. Customarily, the girls in the area are tied into nuptial bonds at an early age, in order to lessen the feeding burden on the family. There was no concept of education, health or sanitation among the thousands of such people living on the edge of poverty and misery. Naseebo like others worked on the construction of the plant along with her other siblings. Now in mid-seventies, she recalled those times. Naseebo who was married a year earlier and

14 New York Times, dated 24th December 1964.

15 Lahore High Court Case No. W.P 18645/2011.

16 Interview with Inayat Ullah in June 2019 at Wazirabad

had become a widow as her husband died in a road accident. ' *I was in the working class, women in my area are physically tough, I used to carry as much load as other but by and large the company had relaxed policy for women labourers. We would carry the bricks in dozen over our heads, we were paid sometimes daily at times on weekly basis. When I was paid for the first time, I was overwhelmed with joy, this was the first ever pay of my life*.' Naseebo, in a sense remained associated with the Mari Daharki Gas plant from its inception till to date. Her two sons and four grandchildren all worked in Mari; her first grandson was not born in an open tent but in an air-conditioned room of Mari Hospital established by the company for the workers. ' *Mari Company has changed the life of many women in my clan, tribe and area, today we have access to drinking water, and women no more have to undergo the agony of pain and desperation thanks to the hospital and free medicines provided by the Mari. Future of our grandchildren is as bright as anyone living on the face of earth, they are getting good education free of cost and are ensured of having job opportunities in the company*.

Allah Rakhiyo Khatian joined the Pak-Stanvac in April 1970, 'I am a local Sindhi from Khatian tribe and belongs to an unprivileged but proud family, after the completion of my matric, I could not see any scope of higher education and as such had to join the workforce from an early age, I was hired as a labourer on a daily wage of Rupees one and half. Syed Azhar Hussain Rizvi was in charge of us, a very good man indeed, so much so that amongst the locals Marri Company was known as the Rizvi Company. Mr Syed Ali Hussain Rizvi was the technical manager and joined the Stanvac from its inception, he played an important role in the establishment and development of Mari Gas Field; he retired in October 1993. Another notable was Behram Ali Meerani who belonged to Goth Sain Dino which is two miles from Daharki. Meerani joined ~~the~~ Esso Eastern as a helper in 1968 right after completing his matriculation examination. With the passage of time and through his hardwork, earned several promotions and became senior instrument technician by the end of 1994.

In 1967, Government of Pakistan passed an ordinance on 23 May; *Natural Gas Development Surcharge Ordinance*. Under this ordinance, natural gas was defined as 'gas obtained from boreholes and wells consisting primarily of hydrocarbons'. 'Every company shall collect and deposit a development surcharge equivalent to the differential price it collected after 31 May 1964'.[17]

It is worth highlighting that majority of international oil companies had left Pakistan after failing to find any worthwhile oil discovery. In 1961, Government of Pakistan in collaboration with Union of Soviet Socialist Russia (USSR) raised Oil and Gas Development Corporation (OGDC). Their first success was in Sarai Singh

[17] Gazette of Pakistan, extraordinary, 23rd May 1967. The National assembly of Pakistan had approved it on the same day.

(Sindh) with little quantity of gas found. The first major oil discovery in Pakistan was made by them in 1968 at Toot (Potohar Punjab). Pakistan Oilfields Limited also discovered oil at Meyal in 1968. Offshore drilling was also given due attention. It is worth mentioning that very first off shore exploration was carried out by Sun Oil Company in 1961, they later drilled wells at Daboo Creek (1963) Patian Creek (1964) and Korangi Creek (1964). Wintershall a German company conducted seismic survey of 24 folds covering 9400 square kilometres in 1969-72 and drilled three wells namely Indus Marine A1 in 1972 and last one Indus Marine C1 in 1975. Husky of USA carried out seismic survey, between 1976-78 of 2,380 square kilometres and drilled one well Karachi South A1 in 1978. Marathon of USA drilled one well at Makran in 1976-77 but abandoned it due to unmanageable outer pressure. However, gas condensate discovery at Dhodak in 1977 by OGDC is the only worth highlighting oil discovery of the decade.

1971 is a sad year in the history of Pakistan; the year long civil war in East Pakistan, rooted in history and blossomed over the economic disparity between the two wings finally erupted in a conventional war with India; the main sponsor of anarchy in East Pakistan. Daharki gas plants also came under air attack from Indian Air Force. On 9 December 1971 at dusk, two Indian Air Force aircraft appeared on the horizon, there was no anti-aircraft artillery present at Daharki, these intruding aircraft made low pass and dropped few bombs which were well off the obvious intended target (Esso plant) however one worker Allah Dino was killed and other Noor Baksh Mehr was injured due to enemy aircraft strafing.

Post 1971-Mari

In the aftermath of the 1971 War and secession of East Pakistan, the country initially underwent a period of gloom, however within a year it was back on its feet. A new democratic regime with a powerful parliament set the pace for progress. In 1973 Arab-Israel War, oil was used as a weapon and as such a new paradigm emerged internationally in which fuel became a security and economic concern. Pakistan was meeting almost 60% of its fuel requirement domestically and as such it boosted the efforts to explore and produce more fuel domestically. In 1974, parliament passed an act authorising government to take over the management of any oil company or to appoint directors, if it felt that such an act is in public interest. It was known as ‘an act to provide management and development of marketing facilities in petroleum products’.[18]Government nationalised two oil refineries, and also formed Pakistan State Oil (PSO). Another major step of the government was to establish an institute for hydrocarbon development .[19]

In 1976, ESSO approached Government of Pakistan for vesting of its certain undertakings in the country and an agreement was reached under which Government

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18 Act No.XVII of 1974, Parliament of Pakistan, *Gazette 8 March 1974.*

19 Hydrocarbon Development Institute of Pakistan (HDIP) was raised in 1975.

of Pakistan undertook certain liabilities and business less the natural gas operations of the company.[20] Later ESSO was amalgamated into Pakistan State Oil (PSO).

Operationally the Mari Field had initiated its Phase II development plan in 1977, it was carried out to meet the additional requirement of supplying gas to newly commissioned Pak-Saudi Fertilizer at Mirpur Mathello, and it was initiated in November 1977 and completed in February 1978. Nine productive wells were drilled and an additional 80MMSCF were being produced, the expansion had cost Rupees 26.7 million.

In May 1981, Phase III of ~~the~~ development in Mari gas field started and completed in July same year, seven new wells were drilled and completed; the driving force of this phase was the new Fauji Fertilizer plant at Goth Machi which required 90 MMSCF daily. Development phase of Mari in 1981 coincided with the first ever discovery of oil at Khaskheli (Sindh) by Union Texas; it is regarded as watershed event in Pakistan's oil history as it negated the paradigm that oil is only available in the Potohar region. In the same year (1981) Stanvac merged in ESSO.[21]

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20 Government of Pakistan, *Gazette dated 30th December 1976, Act of Parliament*.

21 Lahore High Court W.P 18645/2011.